

Listing of Claims

Claim 1. (Currently amended)

A method for providing reliable communication in a system of directly connected [interconnected network of] data processing nodes, said method comprising:

detecting a failure of at least one node [nodes] or a communication link [links] in said [a] system using a heartbeat signal provided over a separate path [mechanism] to indicate to other ones of said nodes in said system that said at least one of said nodes or said communication links is not functioning [are functioning or have failed];

establishing, at one of said other nodes, an instance identifier associated with said failure;

sending notification of said failure, including said instance identifier, to said other nodes having existing communication links with said at least one failed node; and

terminating, at said notified nodes, pending communication links that involve said at least one failed node, said termination being carried out in response to said notification.

Claim 2. (Original)

The method of claim 1 further including the step of detecting that said at least one failed node is no longer in a failed state and resuming communications with that node using an incremented value for said instance identifier.

Claim 3. (Original)

The method of claim 2 further including the step of resuming communications with said other nodes using said incremented instance identifier.

Claim 4. (Currently amended)

A data processing system comprising:

a plurality of interconnected data processing nodes;

heartbeat signal generators within each said node for providing a signal over a separate path to others of said nodes indicative of node failure status;

heartbeat signal detectors within said nodes for indicating that a certain node has failed;

a first program within said nodes for establishing an instance identifier associated with each node failure and for transmitting notification of said failure and said instance identifier to nonfailed nodes; and

a second program within said nodes for terminating, at said notified nodes, pending communication links that involve said at least one failed node, said termination being carried out in response to said notification.

Claim 5. (Original)

The data processing system of claim 4 in which said heartbeat signal detectors also provide an indication that a failed node has returned to functioning status.

Claim 6. (Original)

The data processing system of claim 5 further comprising a third program within said nodes which resumes communication with nodes that have returned to functioning status, said communication including transmission of a new instance identifier.

Claim 7. (Currently amended)

A computer program product comprising a computer readable medium on which is stored program means for:

detecting a failure of nodes or communication links, in a system of directly connected data processing nodes, using a heartbeat signal provided over a separate path [mechanism] to indicate to said nodes that at least one of said nodes or said communication links are functioning or have failed;

establishing an instance identifier associated with said failure;

sending notification of said failure, including said instance identifier, to said other nodes having existing communication links with said at least one failed node; and

terminating, at said notified nodes, pending communication links that involve said at least one failed node, said termination being carried out in response to said notification.